

Work Order ID 116465

April-16-14 11:01:22 AM

116465

Page 1

Item ID: D407-667-205

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Aft Crosstube

Start Date: 4/16/14

Start Qty: 1.00

1

Cust Item ID:

Required Date: 5/01/14

Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan: MLJ

Date: 14-04-16

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run

Start

NR1

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr

Revision Nbr

D407-667-245

Rev F/DEO

100

Document Control

0.00

100

DOCUMENT CONTROL

DAS
31
9-89

DC

Memo

0.00

Doc.Control -USB or Paperwork

Photocopy bluefile and create labels as per PPP D407-667-205 CHG008

14-05-05 MLJ

110

Pick Kit

0.00

110

Packaging

Packaging

Memo

0.00

Packaging

14-04-21

120

BENDING MACHINE - CROSSTUBES

0.00

120

CNC Bend 1

Memo

0.00

CNC Delta 100 Bender

1-Bend tube as per Dwg D407-667-245 using CNC bender program 407 Aft and Folio 21

14-04-21

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Item ID: D407-667-205

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Aft Crosstube

Start Date: 4/16/14 Start Qty: 1.00 *1*

Cust Item ID:

Required Date: 5/01/14 Req'd Qty: 1.00 *1*

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

130

QC15- Crosstube Dimensional Check

0.00

130

QC

Memo

0.00

Quality Control

DAS
03
9-89

DD

14-4-22

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Item ID: D407-667-205

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Aft Crosstube

Start Date: 4/16/14 Start Qty: 1.00

1

Cust Item ID:

Required Date: 5/01/14 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start *NR1*

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

140

0.00

140

Crosstubes

Crosstubes

Crosstubes

Memo

0.00

***** ENSURE PROPER JIG POSITIONING BEFORE DRILLING*****
VERIFIED BY: JW *****

1-Drill pilot holes in tube using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Drill all (3) top holes. Holes facing inboard. Drill and Ream all holes in tube to finish size using drill Jig DT8583 & DT8584 as per Dwg D407-667-245

***** ENSURE PROPER JIG POSITIONING BEFORE DRILLING*****
VERIFIED BY: JB *****

2- Drill fwd rivet holes using drill Jig DT8787 fwd as per Dwg D407-667-245.
Note: FWD side has 3X top holes facing inboard.

3- C'sink holes as per dwg D407-667-245. Allow rivet to sit below surface to compensate for paint.

4- Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins. Drill ONLY 2 top holes ONLY plug most bottom hole to prevent accidental drilling. Drill holes and ream using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Drill only the top (2) holes. Drill & ream the top (2) holes to finish size using drill Jig DT8583 & DT8584 as per Dwg D407-667-245

***** ENSURE PROPER JIG POSITIONING BEFORE DRILLING*****
VERIFIED BY: JB *****

5-Drill aft rivet holes using drill Jig DT8787 aft as per Dwg D407-667-245.

PL/JP 14-04-23

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Item ID: D407-667-205

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N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Aft Crosstube

Start Date: 4/16/14 Start Qty: 1.00

1

Cust Item ID:

Required Date: 5/01/14 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Drill only the top (2) holes.

***** ENSURE PROPER JIG POSITIONING BEFORE DRILLING*****
VERIFIED BY: *[Signature]* *****

6- C'sink holes as per dwg D407-667-245. Allow rivet to sit below surface to compensate for paint.

7- Scribe tube to identify on the inner chamfer in the cuff D# and B#

8-*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***Deburr
& Inspect for surface damage. Repair damage within limits as per Dwg D407-667-245

150

QC5- Inspect part completeness to step on W/O 0.00

150

DAS

16

9-89

QC

Memo

0.00

Quality Control

*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

*14/04/23**BL/ [Signature] 14-04-23**BL/ [Signature] 14-04-23*

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Item ID: D407-667-205

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N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Aft Crosstube

Start Date: 4/16/14 Start Qty: 1.00

1

Cust Item ID:

Required Date: 5/01/14 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
160		0.00							
160						1	0	0	AL
HandFXtube	Memo	0.00							14-4-24
Hand Finishing Crosstubes	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								
	1- CLEAN CROSSTUBE WITH WASH'N WIPE								
180	Outsource process - NDT per QSI038 4.1	0.00							
180									CL 14/04/250
Outsource2	Memo	0.00							
Outsource process - NDT	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								
	Liquid Penetrant Inspection as per QSI 0380 Issue P/O 23923 LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order								
190		0.00							
190	Packaging								14/04/250
Packaging	Memo	0.00							
Packaging	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								
	Ensure copy of NDT results attached to work order.								

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Item ID: D407-667-205

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Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Aft Crosstube

Start Date: 4/16/14 Start Qty: 1.00 *1*

Cust Item ID:

Required Date: 5/01/14 Req'd Qty: 1.00 *1*

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
200	QC5- Inspect part completeness to step on W/O	0.00							
200									
QC	Memo	0.00							
Quality Control	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								
				DAS 27 14/4/25					
204		0.00							
204									
HandFXtube	Memo	0.00							
Hand Finishing Crosstubes	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								
	1- PRESSURE WASH AND THEN USE WASH'N WIPE TO CLEAN CROSSTUBE BEFORE CHEMICAL CONVERSION								
206	QC7-Inspect Chemical Conversion Coat	0.00							
206									
QC	Memo	0.00							
Quality Control	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								

14-04-24

14-4-25

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Item ID: D407-667-205

Accept

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Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Aft Crosstube

Start Date: 4/16/14 Start Qty: 1.00

1

Cust Item ID:

Required Date: 5/01/14 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

210

SprayPaint

0.00

210

SprayPaint

Memo

0.00

Spray Painting

*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

Mask underside of crosstube as shown

1-Prime inside and outside crosstube as per DEO D407-667-245 and QSI 005 4.2

2-Paint outside crosstube with White Imron as per QSI 005 4.2

PRIME: 124403

Start Time: 10:00

Finish Time: 10:40

PAINT: 128574

Start Time: 8:00

Finish Time: 4:00

clear: 128464

220

QC14- Inspect Spray Paint

0.00

220

QC

Memo

0.00

Quality Control

Then, Wrap in plastic bag to protect from scratches

14-04-26

14-04-26 (X)

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N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Aft Crosstube

Start Date: 4/16/14 Start Qty: 1.00

1

Cust Item ID:

Required Date: 5/01/14 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

230

0.00

230

Crosstubes

Crosstubes

Memo

0.00

Crosstubes

1- Install chafing shield as per DEO D407-667-245. Top holes should be facing up.

A/R Proseal 890 Batch: 128 F12
EXP: 10/14

2- Lightly scuff the bonded area using a 320 grit sand paper and clean the area with 41058 wash 'n' wipe

3- Install support with Scotch-Weld DP460 and install clamps as per DEO Dwg D407-667-245 using installation jig DT9025. Torque clamps as per dwg

A/R Scotch-Weld DP460 Batch: m 126 005
EXP: 7/14

LET CURE FOR 24 HOURS

CURE TIME:

START: 10:00FINISH: 10:30

4- Install nut plates as per Dwg D407-667-245. Touch-up rivet heads with Imron paint.

1 _____ 0219-04-28

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Item ID: D407-667-205

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Aft Crosstube

Start Date: 4/16/14 Start Qty: 1.00

1

Cust Item ID:

Required Date: 5/01/14 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID DAS	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
240	QC5- Inspect part completeness to step on W/O	0.00	27						
240			9-29						
QC	Memo	0.00	14/5/12						
Quality Control	***RE-CHECK TORQUE ON CLAMPS AFTER ADHESIVE HAS CURE FOR 24HOURS AS PER DWG DEO***								
250	Pick Kit	0.00							
250									
Packaging	Memo	0.00							
Packaging									
260	QC4- 100% Inspect kits for completeness	0.00							
260									
QC	Memo	0.00							
Quality Control									

DAS 28
9-89
MAY 05 2014DAS 31
9-89

14-05-08

Work Order ID 116465

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Item ID: D407-667-205

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Aft Crosstube

Start Date: 4/16/14 Start Qty: 1.00

1

Cust Item ID:

Required Date: 5/01/14 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
270	Packaging	0.00							
270									
Packaging	Memo	0.00	DAS						
Packaging	Identify and in kanban rack		06						
	Location: <u>014</u>		9-89		MAY 08 2014				
280	QC21- Final Inspection - Work Order Release	0.00							
280									
QC	Memo	0.00							
Quality Control									

MLJ 14-05-08

① 14-05-08

Picklist Print

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Page 1

Work Order ID: 116465

116465

Parent Item: D407-667-205

D407-667-205

Parent Item Name: Aft Crosstube

Start Date: 4/16/14

Required Date: 5/01/14

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:C 05.09.02 Add holes for compatibility with Bell SkidtubesKJ/JLM
IPP Rev:D Added Magnobond,Rubber Cushion & Clamps 07-02-19
JLM

****CHANGE TO CHG 005 - IF USING D2894-1 B35578 OR GREATER****

IPP Rev:E 08-05-22 add comment in seq. 6 and QC15 and QC5 DD verified by:EC

IPP Rev:F 08-06-12 add comment in seq. 24 DD verified by:EC

IPP Rev:G 08-08-19 revE as per dwg DD verified by:EC

IPP Rev H 09.01.06 ECN 08-562 EC verified by:DD IPP Rev:I

10.04.07 revise route seq. in bom DD verified by:JLM IPP Rev J 11.04.26

removed abrasion strip ecn 11-551 EC verified

by:DD

IPP REV:K

11.10.03 DEO D407-667-245-F-2 DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D407-667-205TRN		Manufactured	No			110	Each	10.0000	1	1			
D407-667-205TRN										**			

Crosstube Turning Detail

Location	Loc Qty	Loc Code
LG	3	
105222	1	
115331	1	
115363	1	
LG014	7	
105224	1	
105225	1	
108604	1	
108606	1	
108607	1	
115332	1	
115334	1	

134/ 14-04-21

Picklist Print

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Work Order ID: 116465

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Parent Item: D407-667-205

D407-667-205

Parent Item Name: Aft Crosstube

Start Date: 4/16/14

Required Date: 5/01/14

Start Qty: 1.00

Required Qty: 1.00

D2873-043

Manufactured No

230

Each

116.0000

2

2

D2873-043

Nut Plate Assembly

As 14-4-25

Location

Loc Qty

Loc Code

LG052

116

104871

1

107964

10

112264

25

113050

40

114550

40

D2873-045

Manufactured No

230

Each

119.0000

2

2

D2873-045

Nut Plate Assembly

As 14-4-25

Location

Loc Qty

Loc Code

LG

34

112430

34

LG052

85

108829

5

113144

40

113886

40

D2894-1

Manufactured No

230

Each

18.0000

1

1

D2894-1

2.75 Support

CR 14-04-27

Location

Loc Qty

Loc Code

LG052

18

103950

2

105623

6

113132

10

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Parent Item: D407-667-205

D407-667-205

Parent Item Name: Aft Crosstube

Start Date: 4/16/14

Required Date: 5/01/14

Start Qty: 1.00

Required Qty: 1.00

D3190-1 Manufactured No 230 Each 43.0000 2 2

D3190-1

Chaffing Shield

**

CR 14-04-27

Location

Loc Qty

Loc Code

LG053

43

105834

29

109948

14

2 (4) → 2 scrap AS 14-4-30

D3595-063-450 Manufactured No 230 Each 85.0000 2 2

D3595-063-450

Rubber Cushion

**

CR 14-04-27

Location

Loc Qty

Loc Code

FG

15

88422

5

94274

10

LG

15

111538

15

LG051

55

109526

2

113323

28

115271

25

2

MS20601-AD4W8 Purchased No 230 Each 653.0000 14 14

MS20601-AD4W8

RIVET

**

AS 14-4-25

Location

Loc Qty

Loc Code

ST311

653

M126637

24

M127813

129

M128429

200

M128650

300

14

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Parent Item: D407-667-205

D407-667-205

Parent Item Name: Aft Crosstube

Start Date: 4/16/14

Required Date: 5/01/14

Start Qty: 1.00

Required Qty: 1.00

MS21920-22 Purchased No 230 Each 307.0000 4 4

MS21920-22

Clamp

**

CR 14-04-27

Location	Loc Qty	Loc Code
LG	200	
M128636	200	
LG050	107	
M127255	40	
M127608	19	2
M128199	48	2

MS21920-25 Purchased No 230 Each 86.0000 2 2

MS21920-25

Clamp

**

CR 14-04-27

Location	Loc Qty	Loc Code
FG	2	
120920	2	
LG050	84	
M127823	25	2
M128012	9	
M1285701	25	
M128718	25	

NAS1149D0563J Purchased No 230 Each 4,532.000 18 18

NAS1149D0563.J

Washer

**

DAS
28
9-89

MAY 05 2014

Location	Loc Qty	Loc Code
GA	201	
m125807	201	
ST510a	4331	
m126319	2331	18x
m128257	2000	

DAS
31
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Parent Item: D407-667-205

D407-667-205

Parent Item Name: Aft Crosstube

Start Date: 4/16/14

Required Date: 5/01/14

Start Qty: 1.00

Required Qty: 1.00

AN5-10A Purchased No 250 Each 674.0000 10 10

AN5-10A

BOLT

**

DAS
28
9-89

MAY 05 2014

DAS
31
9-89

Location

Loc Qty

Loc Code

GA	101
122800	101
ST362	366
M127432	66
M128634	300
st503	207
M126180	207

10X

AN5-32A Purchased No 250 Each 446.0000 4 4

AN5-32A

Bolt

**

DAS
28
9-89

DAS
31
9-89

Location

Loc Qty

Loc Code

ST337	114
124215	110
m127363	4
st503	182
m127550	30
m128403	152
ST504	150
m128634	150

4X

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Parent Item Name: Aft Crosstube

Start Date: 4/16/14

Required Date: 5/01/14

Start Qty: 1.00

Required Qty: 1.00

AN5-34A

Purchased

No

250

Each

206.0000

4 4

AN5-34A

Bolt

DAS
31
9-89

Location

Loc Qty

Loc Code

ST338

106

m126176

6

m127817

14

m127933

36

m128403

50

st503

100

m128634

100

MS21042L5

Purchased

No

250

Each

1,603.000

4 4

MS21042L5

Nut

DAS
31
9-89

Location

Loc Qty

Loc Code

GA

5

117611

5

ST315

98

m127304

98

ST509

1500

m127813

500

m128810

1000

DAS
28
9-89

MAY 05 2014

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Shop Packet Print

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DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Suspected Unapproved <input type="checkbox"/>	AGAINST DEPARTMENT/PROCESS <table style="width:100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table>	Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>	
Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>															
Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>															
Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>															
Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>																

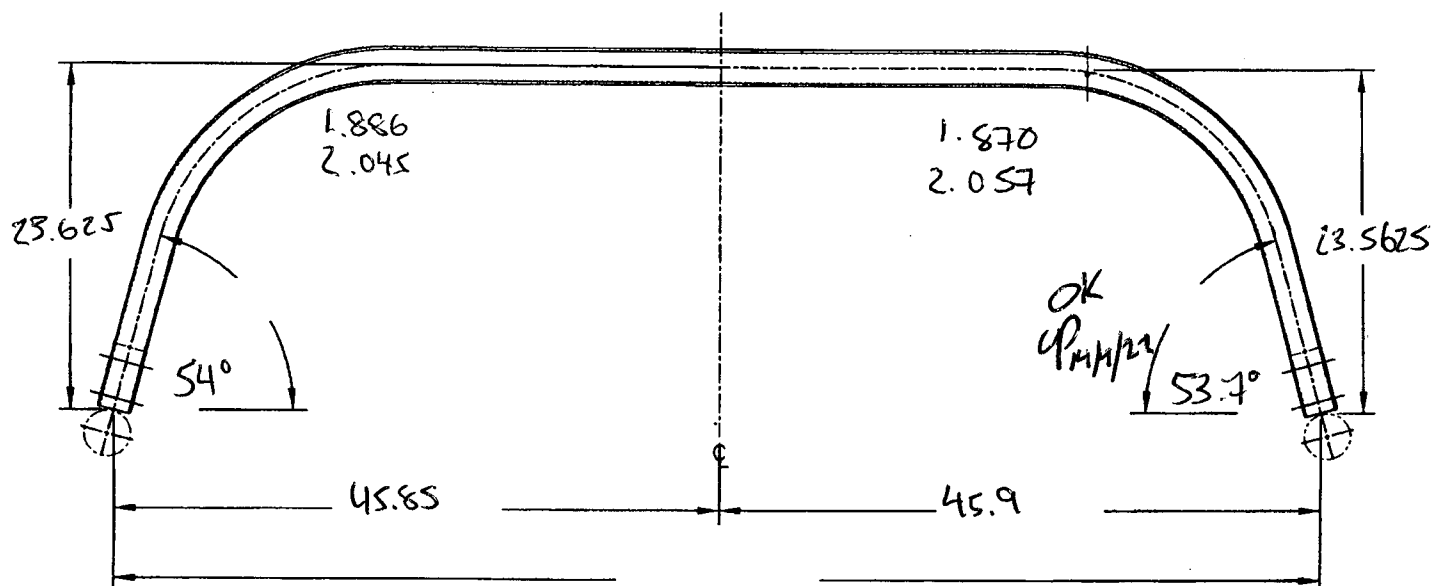
Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design									
Doc/Data									
Equip/Tooling									
Handling/Pre									
Material									
Operator									
Offset/Setup									
Process									
Supplier									
Training									
Transport									
Unapproved									

FAULT CATEGORY

Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric <input type="checkbox"/> Cracks <input type="checkbox"/> Crimp/Kink/Ripple/Wave <input type="checkbox"/> Cuffs <input type="checkbox"/> Crushing <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Marks/Chatter <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damage/Defect <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drawing <input type="checkbox"/> Drill Holes <input type="checkbox"/> Finish <input type="checkbox"/> Fit/Function	<input type="checkbox"/> Folio/Program <input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete/Unqualified <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Misaligned/off center <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Off-set <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence	<input type="checkbox"/> Outside Dimensions <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge <input type="checkbox"/> Pressure/Forced Set-up <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other
--	--	---	--

DART AEROSPACE LTD		Work Order:	116465
Description: Crosstube High Aft (407)		Part Number:	D407-667-205
Inspection Dwg: D407-667-245	Rev: F	Page 1 of 1	

Required Dimension	Min	Max
Height	23.39	23.65
1/2 Span	45.79	46.05
Angle	54	56
Total Span	91.58	92.100
Bending Passes	6	--
Crushing	--	6%



	Side A	Side B
Bending Passes	28	30
Crushing	4%	4.8%
Comments		

QC15 Inspection	DAS 03 9-89
Date	14-4-22

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	09.06.22	Dwg Rev updated	KJ	
C	11.08.22	Dimensions updated	KJ	
D	11.09.30	Dimensions updated	KJ	
E	12.04.16	Added bending, crushing dimensions	KJ	

Item	QTY -245	PART NUMBER	DESCRIPTION
1	X	D407-667-245	CROSSTUBE ASSEMBLY (407 HIGH AFT)
2	1	D6011-115	CROSSTUBE
3	2	D2856-400-773	ABRASION STRIP
4	2	D2873-043	NUT PLATE
5	2	D2873-045	NUT PLATE
6	1	D2894-1	SUPPORT
7	2	D3190-1	CHAFING SHIELD
8	2	D3595-063-430	RUBBER CUSHION
9	14	MS20601AD4W8	RIVET (OR NAS9302B-4-8)
10	4	MS21920-22	CLAMP
11	2	MS21920-25	CLAMP (OR MS21920-24)
12	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947- 100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6011-115
FINISHED LENGTH = 112.91±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D407-667-245" AND BATCH NUMBER ON
INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: 27.7 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY. TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 6 PASSES. MAXIMUM TUBE FLATTENING DUE TO
BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2894-1 CENTER SUPPORT USING A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND
6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO
PACKAGING.
- 13) INSTALL MS21920-25 CLAMPS WITH D3595-063-430 RUBBER CUSHIONS TO SECURE D2894-1
SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE CROSSTUBE
SUPPORT.
NOTE: MS21920-24 CLAMPS CAN BE USED TO ACCOMMODATE VARYING DIAMETERS.
ENSURE THERE IS A MINIMUM OF 1.5 THREADS IN SAFETY ON THE NUTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE
OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS
SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT
LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) INSTALL D2856-400-773 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF
CROSSTUBE. PER QSI 035.
- 16) INSTALL D3190-1 CHAFING SHIELDS SO THAT OVERLAP IS ON BOTTOM SIDE OF CROSSTUBE
OPPOSITE D2894-1 SUPPORT.
- 17) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN
SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

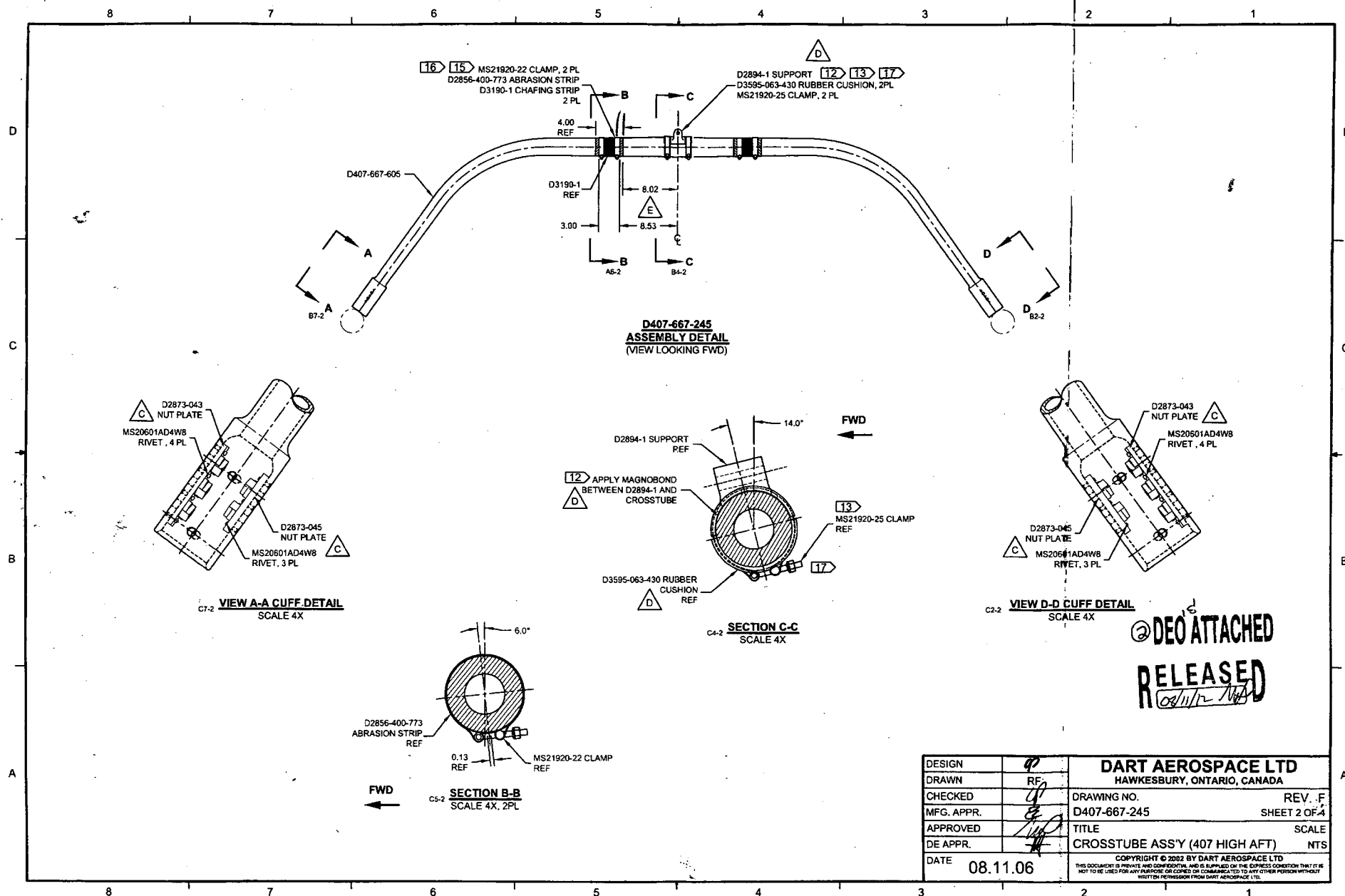
116465 MJS
14-04-16

@DEO ATTACHED

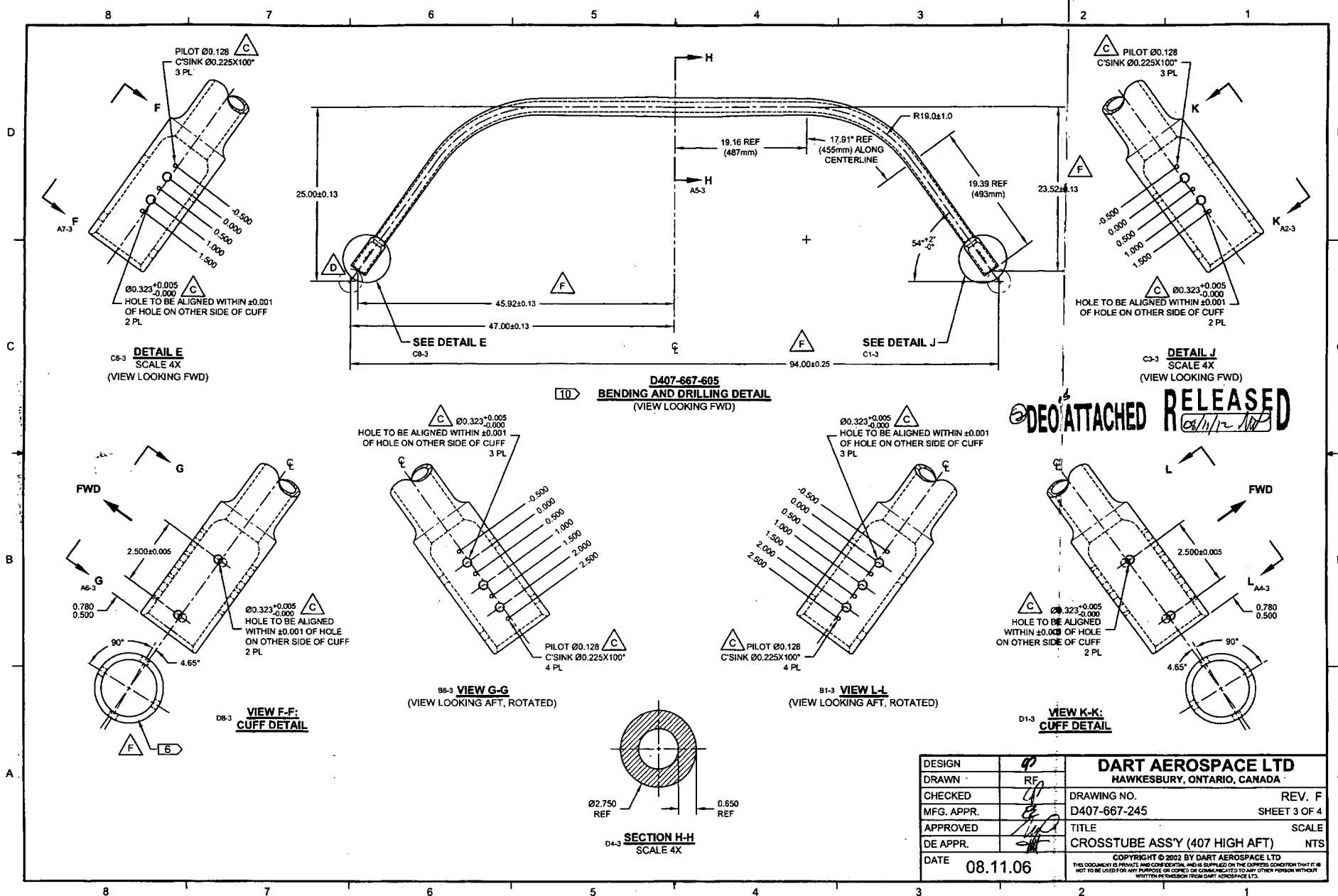
RELEASED
08/11/12 NCR

F	REFORMAT NOTES TO NEW STANDARDS (ZN B8-1); RELOCATED FLAG # 6 (ZN A8-3) PER NCR 210; REMOVED REF. & ADD TOLERANCES (ZN C6-3, C4-3 & D2-3)	RF	08.11.06
E	8.02 AND 8.53 WERE 8.40 AND 8.90 (ZN D5-2); REORGANIZED VIEWS AND REFORMATED DRAWING TO CURRENT STANDARDS. REASONS: CLAMPS MOVED 0.375 TOWARD CL TO ELIMINATE INTERFERENCE WITH AIRCRAFT MOUNTS. REFERENCE: PAR#08-21 AND ECH#1225	MB	08.07.24
D	ADD VIEW FOR OEM SKID HOLES. ROTATE ORIENTATION OF CLAMPS SECTION F-F. REMOVE -851 ABRASION STRIP. ADD MAGNOBOND 6398, ADD CUSHION	PH	07.02.07
C	ADD HOLES AND NUT PLATES FOR COMPATIBILITY WITH BHT/AA SKIDTUBES	PH	05.07.26
B	ADD CHAFING SHIELD	CP	03.05.21
A	NEW ISSUE	CP	02.05.13
REV.	DESCRIPTION	BY	DATE
DESIGN	97		
DRAWN	RF		
CHECKED	97		
MFG. APPR.	97		
APPROVED	97		
DE APPR.	97		
DATE	08.11.06		

DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D407-667-245	REV. F SHEET 1 OF 4
TITLE CROSSTUBE ASS'Y (407 HIGH AFT)	SCALE NTS
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DESIGN	90	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	4	DRAWING NO.	REV. F
MFG. APPR.	4	D407-667-245	SHEET 2 OF 4
APPROVED	4	TITLE	SCALE
DE APPR.	4	CROSSTUBE ASS'Y (407 HIGH AFT)	NTS
DATE	08.11.06	COPYRIGHT © 2002 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	



D407-667-245 MACHINING DETAIL

RELEASED
08/11/12 JMD

DEO ATTACHED

SEE DETAIL M
A7-4

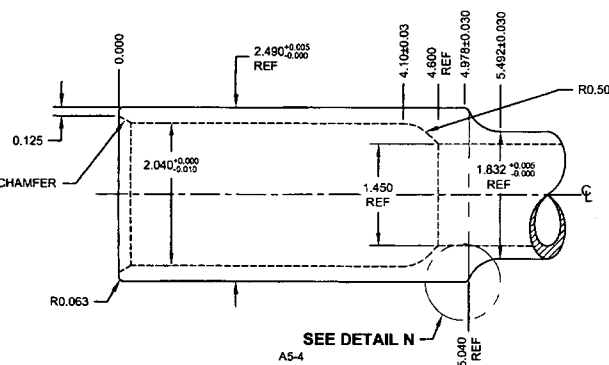
R100.0 TRANSITION
BETWEEN TAPERED
SECTIONS

R100.0 TRANSITION
BETWEEN TAPERED
SECTIONS

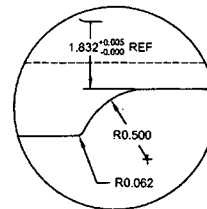
R100.0 TRANSITION
BETWEEN TAPERED
SECTIONS

SEE DETAIL P
A2-4

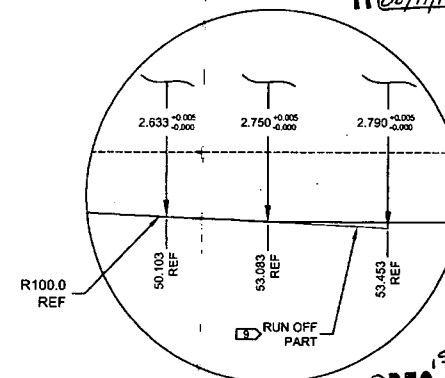
TAPER UNIFORMLY FROM
2.633^{+0.005}_{-0.005} REF THROUGH TO 2.790^{+0.005}_{-0.005} REF
RUNNING OFF PART



DETAIL M: CROSSTUBE CUFF
SCALE 3X



DETAIL N: CUFF TRANSITION
SCALE 2X



DETAIL P: TAPER RUN-OFF
NOT TO SCALE

DESIGN	90	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	JP	DRAWING NO.	REV. F
MFG. APPR.	JP	D407-667-245	SHEET 4 OF 4
APPROVED	JP	TITLE	SCALE
DE APPR.	JP	CROSSTUBE ASS'Y (407 HIGH AFT)	NTS
DATE	08.11.06	COPYRIGHT © 2002 BY DART AEROSPACE LTD	
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DRAWING NO. D407-667-245	TITLE CROSSTUBE ASSY (407 HIGH AFT)	REV. F	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D407-667-245-F-1	SHEET NO. SHEET 1 OF 2	SCALE NTS
DRAWN <i>[Signature]</i>	CHECKED <i>[Signature]</i>	MFG. APPR. <i>[Signature]</i>	APPROVED <i>[Signature]</i>		DE APPR. <i>[Signature]</i>		
DATE 11.04.08	DATE 11.04.12	DATE 11.04.12	DATE 11.04.12		DATE 11.04.12		

PURPOSE:

REMOVED ABRASION STRIP IN FAVOR OF A THIN LAYER OF PROSEAL 890.

CHANGE:

PARTS LIST IS AMENDED AS FOLLOWS:

IS:

Item	Qty -245	Part Number	Description
3	0	D2856-400-773	ABRASION STRIP

WAS:

3	2	D2856-400-773	ABRASION STRIP
---	---	---------------	----------------

NOTES 2 AND 15, SHEET 1 ARE AMENDED AS FOLLOWS:

IS:

- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
MASK UNDERSIDE OF CROSSTUBE AS SHOWN (HATCHED AREA) AND
PAINT OUTSIDE PER DART QSI 005 4.2
REMOVE MASKING AND APPLY CLEAR COAT
- 15) APPLY A THIN COAT OF PROSEAL 890 ON INSIDE CONCAVE SURFACE OF D3190-1
CHAFING SHIELDS AND LET CURE PER MANUFACTURER'S INSTRUCTIONS. INSTALL
PROSEAL D3190-1 CHAFING SHIELDS ONTO CROSSTUBE BY APPLYING A THIN COAT
OF PROSEAL 890 ONTO CROSSTUBE. BE SURE TO ELIMINATE ANY AIR GAPS.

WAS:

- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 15) INSTALL D2856-400-773 ABRASION STRIP WITH A 0.13 REF GAP ON BOTTOM SIDE OF
CROSSTUBE PER QSI 035.

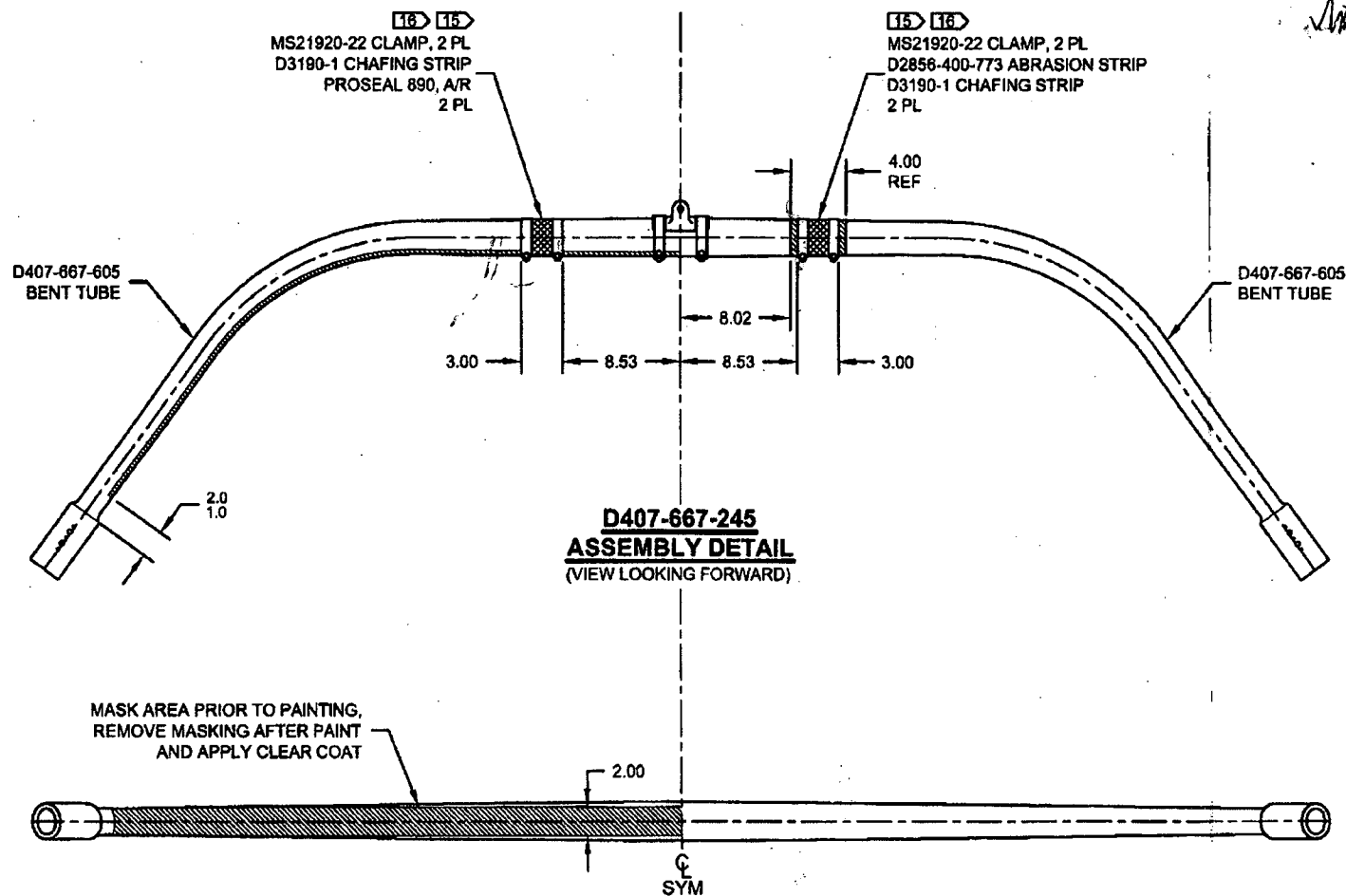
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2011-04-18
[Signature]

DRAWING NO. D407-667-245	TITLE CROSSTUBE ASSY (407 HIGH AFT)	REV. F	DART AEROSPACE LTD ENGINEERING ORDER	D.E.O. NO. D407-667-245-F.1	SHEET NO. SHEET 2 OF 2	SCALE NTS
DRAWN	CHECKED	6.7	MFG. APPR.	APPROVED	DE APPR.	
DATE 11.04.08	DATE 11.04.11		DATE 11.04.12	DATE 11/04/12	DATE 11.04.12	

IS:

WAS:

RELEASED
2011-04-18



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DRAWING NO. D407-667-245	TITLE CROSSTUBE ASS'Y (407 HIGH AFT)	REV. F	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D407-667-245-F-2	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN JP	CHECKED ASS	MFG. APPR. E	APPROVED MP	DE APPR. H			
DATE 11.09.07	DATE 11.09.19	DATE 11.09.19	DATE 11.09.19	DATE 11.09.19			

PURPOSE:

REPLACE MAGNOBOND WITH 3M DP460 SCOTCH-WELD EPOXY ADHESIVE

CHANGE:

IS:

Item	Qty -245	Part Number	Description
12	A/R	SCOTCH-WELD DP460	EPOXY ADHESIVE, 3M SCOTCH-WELD

WAS:

12	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
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NOTE 12 & 17, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) INSTALL D2894-1 CENTER SUPPORT USING A 0.04" TO 0.07" THICK LAYER OF SCOTCH-WELD DP460 PER QSI 015. LET CURE FOR 24 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER ADHESIVE HAS CURED FOR 24 HOURS.

WAS:

- 12) INSTALL D2894-1 CENTER SUPPORT USING A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED
2011-09-29
MD



skyservice Work Order Traveler

Sky Service F.B.O. Inc.

Page: 1 of 1

DOT APP 53-89 / EASA 145.7142 / BDA AMO 385

WO #: MWO20028

Customer: Cash Sale

Dept: NDT YUL

Reference: 23923

Descr:

PN: DART AEROSPACE

S/N:

Qty: 1

Make:

Model:

Reg:

A/C S/N:

TSN: 0

CSN: 0

TSO: 0

Task:

Sequence: 0

Work Required:

CARRY OUT NDT ON THE FOLLOWING CROSSTUBES ID D407-667-205

① WORK ORDER ID 116462

DAS

② WORK ORDER ID 112867

27

8-89

③ WORK ORDER ID 112863

④ WORK ORDER ID 116465

⑤ WORK ORDER ID 116459

Action Taken:

Date:

Initial/Stamp:

LIQUID PENETRANT INSPECTION CARRIED OUT
ON AFT CROSSTUBES D407-667-205
IAW ASTM E1417-M13

① W.O. ID 116462 - NO CRACKS FOUND

24 APR 14

② W.O. ID 112867 - NO CRACKS FOUND

24 APR 14

③ W.O. ID 112863 - NO CRACKS FOUND

24 APR 14

④ W.O. ID 116465 - NO CRACKS FOUND

24 APR 14

⑤ W.O. ID 116459 - NO CRACKS FOUND

24 APR 14

Description

Location

P/N

Qty

Batch

S/N Off

S/N On

PENETRANT ARDROX 970-P-25E TPD10484
BLACK LIGHT MZD189

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature:

Name:

GARY SMITH

ACA/SCA
Stamp

DOT-APP
19
53-89

Date:

24 APR
2014

DQA:

Date:

14/05/16

QA Closed:

Date:

14/05/13

WORK ORDER NON-CONFORMANCE / UPDATE

Work Order update only ☐

Work Order: <u>116465</u>	DISPOSITION Rework <input checked="" type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Suspected Unapproved <input type="checkbox"/>	AGAINST DEPARTMENT/PROCESS			
Part No. <u>D407-667-205</u>		Skid-tube Machining <input type="checkbox"/>	Crosstube Small Fab <input checked="" type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering Quality <input type="checkbox"/>
NCR No. <u>14/ 3852</u>		Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Other <input type="checkbox"/>
		Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Rec/Store/Packaging Supplier <input type="checkbox"/>	

Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design									
Doc/Data									
Equip/Tooling									
Handling/Pre									
Material									
Operator									
Offset/Setup									
Process									
Supplier									
Training									
Transport									
Unapproved									
	14/04/29	230	x1	Found that the chamber drills to D31901 ARE positioned in wrong location. @ 8.00" should be @ 8.530" R.C. - incorrect assembly in miss read Dwg.	DAS 16 9-89 Q2042 14/04/29	Remove + clean D3190-1 and tube of Posal. Reinstall new Posal. B# 128712 exp 10/14 Locat D3190-1 in correct locati + install per Dwg.	Ad 14-4-30 CR 14-05-11	DAS 27 9-29 14/5/12	DAS 16 9-89 Q2042 14/04/29

FAULT CATEGORY

Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric <input type="checkbox"/> Cracks <input type="checkbox"/> Crimp/Kink/Ripple/Wave <input type="checkbox"/> Cuffs <input type="checkbox"/> Crushing <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Marks/Chatter <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damage/Defect <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drawing <input type="checkbox"/> Drill Holes <input type="checkbox"/> Finish <input type="checkbox"/> Fit/Function	<input type="checkbox"/> Folio/Program <input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete/Unqualified <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Misaligned/off center <input type="checkbox"/> Mislabeled <input checked="" type="checkbox"/> Misread <input type="checkbox"/> Off-set <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence	<input type="checkbox"/> Outside Dimensions <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input checked="" type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge <input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Set-up <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input checked="" type="checkbox"/> Other
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MISS READ Dwg.